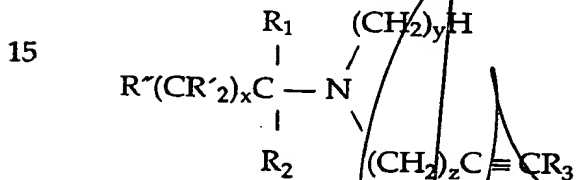


WE CLAIM:

1. A use of a propargylamine to enhance the activity of an antineoplastic drug.
2. A use according to claim 1 wherein the propargylamine
5 increases the sensitivity of a tumor to the antineoplastic drug.
3. A use according to claim 2 wherein the tumor is a drug resistant tumor.
4. A use according to claim 1 wherein the propargylamine protects normal cells from the cytotoxic effects of the antineoplastic drug.
- 10 5. A use of (a) a propargylamine and (b) an antineoplastic drug to treat cancer.
6. A use according to any one of claims 1-5 wherein the propargylamine is of the general formula I



wherein

- 20 x is an integer ranging from 0 to 13;
- y is an integer ranging from 0 to 5;
- z is an integer ranging from 0 to 5;
- R₁, R₂ and R₃ are the same or different and represent hydrogen or a straight chain or branched lower alkyl; and
- 25 R' and R'' are the same or different and represent hydrogen, phenyl or a halogen and pharmaceutically acceptable salts thereof.

- 21 -

7. A use according to claim 6 wherein y is 1.
8. A use according to claim 7 wherein the propargylamine is R-2-heptyl-methyl propargylamine (R-2HMP).
9. A use according to claim 7 wherein the propargylamine is
5 selected from the group consisting of N-(1-Propyl) N-methylpropargylamine; N-(2-Propyl) N-methylpropargylamine; N-(1-Butyl) N-methylpropargylamine; N-(1-Pentyl) N-methylpropargylamine; N-(1-Hexyl) N-methylpropargylamine; N-(1-Heptyl) N-methylpropargylamine; N-(1-Octyl)
10 N-methylpropargylamine; N-(1-Nonyl) N-methylpropargylamine; N-(1-Decyl) N-methylpropargylamine; N-(1-Undecyl) N-methylpropargylamine; N-(1-Dodecyl) N-methylpropargylamine; (R)-N-(2-Butyl) N-methylpropargylamine; (R)-N-(2-Pentyl) N-methylpropargylamine; (R)-N-(2-Hexyl) N-methylpropargylamine;
15 (R)-N-(2-Heptyl) N-methylpropargylamine; (R)-N-(2-Octyl) N-methylpropargylamine; (R)-N-(2-Decyl) N-methylpropargylamine; (R)-N-(2-Undecyl) N-methylpropargylamine; and (R)-N-(2-Dodecyl) N-methylpropargylamine.
- 20 10. A use according to claim 6 wherein y is 0.
11. A use according to claim 10 wherein the propargylamine is R-2-heptyl-propargylamine (R-2HPA).
12. A use according to claim 10 wherein said propargylamine is selected from the group consisting of N-(1-Propyl) propargylamine;
25 N-(2-Propyl) propargylamine; N-(1-Butyl) propargylamine; N-(1-Pentyl) propargylamine; N-(1-Hexyl) propargylamine; N-(1-Heptyl) propargylamine; N-(1-Octyl) propargylamine; N-(1-Nonyl)

- 22 -

propargylamine; N-(1-Decyl) propargylamine; N-(1-Undecyl)
propargylamine; N-(1-Dodecyl) propargylamine; (R)-N-(2-Butyl)
propargylamine; (R)-N-(2-Pentyl) propargylamine; (R)-N-(2-Hexyl)
propargylamine; (R)-N-(2-Heptyl) propargylamine; (R)-N-(2-Octyl)
5 propargylamine; (R)-N-(2-Octyl) propargylamine; (R)-N-(2-Decyl)
propargylamine; (R)-N-(2-Undecyl) propargylamine; and (R)-N-(2-Dodecyl)
propargylamine.

13. A use according to any one of claims 1 to 7, 9, 10 or 12
wherein the propargylamine is a chiral compound and is the R-
10 enantiomer.

14. A use according to any one of claims 1-6 wherein the
propargylamine is R-deprenyl.

15. A use according to any one of claims 1-6 wherein the
propargylamine is R-desmethyldeprenyl.

15 16. A use according to any one of claims 1-5 wherein the
propargylamine is Rasagiline.

17. A use according to any one of claims 1-16 wherein the animal
is a human.

18. A use according to any one of claims 1-17 wherein the
20 antineoplastic drug is selected from the group consisting of cytosine
arabioside, cis-platinum, cyclophosphamide, adriamycin, daunomycin,
and 5-fluorouracil.

19. A pharmaceutical composition for enhancing the activity of
an antineoplastic drug comprising an effective amount of a
25 propargylamine in admixture with a suitable diluent or carrier.

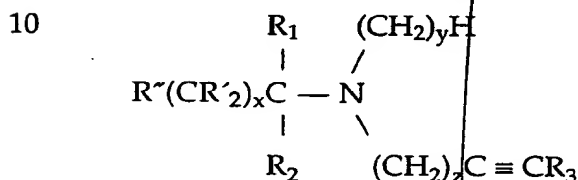
- 23 -

20. A pharmaceutical composition according to claim 19 for increasing the sensitivity of a tumor to the antineoplastic drug.

21. A pharmaceutical composition according to claim 19 for protecting normal cells from the cytotoxic effects of the antineoplastic drug.

22. A pharmaceutical composition for treating cancer comprising an antineoplastic drug and an effective amount of a propargylamine.

23. A pharmaceutical composition according to any one of claims 19 to 22, wherein the propargylamine is of the general formula I:



15 wherein

x is an integer ranging from 0 to 13;

y is an integer ranging from 0 to 5;

z is an integer ranging from 0 to 5;

20 R₁, R₂ and R₃ are the same or different and represent hydrogen or a straight chain or branched lower alkyl; and

R' and R' are the same or different and represent hydrogen, phenyl or a halogen and pharmaceutically acceptable salts thereof.

24. A pharmaceutical composition according to claim 23 wherein y is 1.

25. A pharmaceutical composition according to claim 24 wherein the propargylamine is R-2-heptyl-methyl propargylamine (R-2HMP).

- 24 -

26. A pharmaceutical composition according to claim 24 wherein the propargylamine is selected from the group consisting of N-(1-Propyl) N-methylpropargylamine; N-(2-Propyl) N-methylpropargylamine; N-(1-Butyl) N-methylpropargylamine; N-(1-Pentyl) N-methylpropargylamine; N-(1-Hexyl) N-methylpropargylamine; N-(1-Heptyl) N-methylpropargylamine; N-(1-Octyl) N-methylpropargylamine; N-(1-Nonyl) N-methylpropargylamine; N-(1-Decyl) N-methylpropargylamine; N-(1-Undecyl) N-methylpropargylamine; N-(1-Dodecyl) N-methylpropargylamine; (R)-N-(2-Butyl) N-methylpropargylamine; (R)-N-(2-Pentyl) N-methylpropargylamine; (R)-N-(2-Hexyl) N-methylpropargylamine; (R)-N-(2-Heptyl) N-methylpropargylamine; (R)-N-(2-Octyl) N-methylpropargylamine; (R)-N-(2-Decyl) N-methylpropargylamine; (R)-N-(2-Undecyl) N-methylpropargylamine; and (R)-N-(2-Dodecyl) N-methylpropargylamine.

27. A pharmaceutical composition according to claim 23, wherein y is 0.

28. A pharmaceutical composition according to claim 27 wherein the propargylamine is R-2-heptyl-propargylamine (R-2HPA).

29. A pharmaceutical composition according to claim 27 wherein said propargylamine is selected from the group consisting of N-(1-Propyl) propargylamine; N-(2-Propyl) propargylamine; N-(1-Butyl) propargylamine; N-(1-Pentyl) propargylamine; N-(1-Hexyl) propargylamine; N-(1-Heptyl) propargylamine; N-(1-Octyl) propargylamine; N-(1-Nonyl) propargylamine; N-(1-Decyl) propargylamine; N-(1-Undecyl) propargylamine; N-(1-Dodecyl) propargylamine; (R)-N-(2-Butyl) propargylamine; (R)-N-(2-Pentyl) propargylamine; (R)-N-(2-Hexyl) propargylamine; (R)-N-(2-Heptyl)

- 25 -

propargylamine; (R)-N-(2-Octyl) propargylamine; (R)-N-(2-Octyl) propargylamine; (R)-N-(2-Decyl) propargylamine; (R)-N-(2-Undecyl) propargylamine; and (R)-N-(2-Dodecyl) propargylamine.

30. A pharmaceutical composition according to any one of claims
5 19 to 24, 26, 27 or 29 wherein the propargylamine is a chiral compound and is the R-enantiomer.

31. A pharmaceutical composition according to any one of claims
19 to 23, wherein the propargylamine is R-deprenyl.

32. A pharmaceutical composition according to any one of claims
10 19 to 23, wherein the propargylamine is R-desmethyldiprenyl.

33. A pharmaceutical composition according to any one of claims
19 to 22, wherein the propargylamine is Rasagiline.

34. A method for enhancing the activity of an antineoplastic
15 drug comprising administering an effective amount of a propargylamine to an animal in need thereof.

35. A method according to claim 34 wherein the propargylamine
increases the sensitivity of a tumor to an antineoplastic drug.

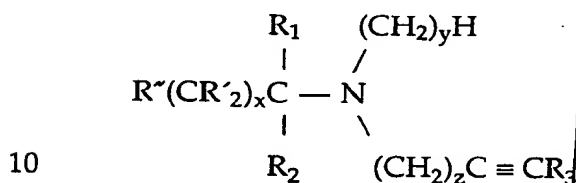
36. A method according to claim 35 wherein the tumor is a drug
resistant tumor.

20 37. A method according to claim 34 wherein the propargylamine
protects normal cells from the cytotoxic effects of the antineoplastic drug.

- 26 -

38. A method for treating cancer comprising administering an antineoplastic drug and an effective amount of a propargylamine to an animal in need thereof.

39. A method according to any one of claims 34 to 38, wherein
5 the propargylamine is of the general formula I



wherein

x is an integer ranging from 0 to 13;

y is an integer ranging from 0 to 5;

z is an integer ranging from 0 to 5;

15 R_1 , R_2 and R_3 are the same or different and represent hydrogen or a straight chain or branched lower alkyl; and

R' and R'' are the same or different and represent hydrogen, phenyl or a halogen and pharmaceutically acceptable salts thereof.

40. A method according to claim 39 wherein y is 1.

20 41. A method according to claim 40 wherein the propargylamine is R-2-heptyl-methyl propargylamine (R-2HMP).

42. A method according to claim 39 wherein the propargylamine is selected from the group consisting of N-(1-Propyl) N-methylpropargylamine; N-(2-Propyl) N-methylpropargylamine;
25 N-(1-Butyl) N-methylpropargylamine; N-(1-Pentyl) N-methylpropargylamine; N-(1-Hexyl) N-methylpropargylamine; N-(1-Heptyl) N-methylpropargylamine; N-(1-Octyl)

- 27 -

N-methylpropargylamine; N-(1-Nonyl) N-methylpropargylamine;
N-(1-Decyl) N-methylpropargylamine; N-(1-Undecyl)
N-methylpropargylamine; N-(1-Dodecyl) N-methylpropargylamine;
(R)-N-(2-Butyl) N-methylpropargylamine; (R)-N-(2-Pentyl)
5 N-methylpropargylamine; (R)-N-(2-Hexyl) N-methylpropargylamine;
(R)-N-(2-Heptyl) N-methylpropargylamine; (R)-N-(2-Octyl)
N-methylpropargylamine; (R)-N-(2-Octyl) N-methylpropargylamine;
(R)-N-(2-Decyl) N-methylpropargylamine; (R)-N-(2-Undecyl)
N-methylpropargylamine; and (R)-N-(2-Dodecyl)
10 N-methylpropargylamine.

43. A method according to claim 39, wherein y is 0.

44. A method according to claim 43 wherein the propargylamine
is R-2-heptyl-propargylamine (R-2 HPA).

45. A method according to claim 43 wherein the propargylamine
15 is selected from the group consisting of N-(1-Propyl) propargylamine;
N-(2-Propyl) propargylamine; N-(1-Butyl) propargylamine; N-(1-Pentyl)
propargylamine; N-(1-Hexyl) propargylamine; N-(1-Heptyl)
propargylamine; N-(1-Octyl) propargylamine; N-(1-Nonyl)
propargylamine; N-(1-Decyl) propargylamine; N-(1-Undecyl)
20 propargylamine; N-(1-Dodecyl) propargylamine; (R)-N-(2-Butyl)
propargylamine; (R)-N-(2-Pentyl) propargylamine; (R)-N-(2-Hexyl)
propargylamine; (R)-N-(2-Heptyl) propargylamine; (R)-N-(2-Octyl)
propargylamine; (R)-N-(2-Octyl) propargylamine; (R)-N-(2-Decyl)
propargylamine; (R)-N-(2-Undecyl) propargylamine; and (R)-N-(2-Dodecyl)
25 propargylamine.

46. A method according to any one of claims 34 to 39, wherein
the propargylamine is R-deprenyl.

- 28 -

47. A method according to any one of claims 34 to 39, wherein the propargylamine is R-desmethyldoprenyl.
48. A method according to any one of claims 34 to 38, wherein the propargylamine is Rasagiline.
- 5 49. A method according to any one of claims 34 to 48, wherein the animal is a human.
50. A method according to any one of claims 34 to 49 wherein the antineoplastic drug is selected from the group consisting of cytosine arabinoside, cis-platinum, cyclophosphamide, adriamycin, daunomycin,
10 and 5-fluorouracil.
51. A method according to any one of claims 34 to 40, 42, 43 and 45 wherein the propargylamine is a chiral compound and is the R-enantiomer.

